NON-PUBLIC?: N
ACCESSION #: 9407070005
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Salem Generating Station - Unit 1 PAGE: 1 OF 4

DOCKET NUMBER: 05000272

TITLE: Turbine/Reactor Trip Due To Main Generator Ground Fault Protection Actuation With Reactor Power More Than/= 50%
EVENT DATE: 06/10/94 LER #: 94-009-00 REPORT DATE: 06/29/94

OTHER FACILITIES INVOLVED: DOCKET NO: 05000

OPERATING MODE: 1 POWER LEVEL: 097

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR SECTION:
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: M. J. Pastva, Jr. - LER Coordinator TELEPHONE: (609) 339-5165

COMPONENT FAILURE DESCRIPTION:
CAUSE: B SYSTEM: EL COMPONENT: XPT MANUFACTURER: W120
REPORTABLE NPRDS: Y

SUPPLEMENTAL REPORT EXPECTED: NO

ABSTRACT:

On 6/10/94, at 1434 hours, a turbine/reactor trip turbine trip signal while above the P-9 reactor power interlock setpoint of >/= 50% reactor power. The turbine trip was initiated by a main generator ground fault protection relay, CV-8, actuation. Emergency operating procedures were entered and Main Steam was isolated to limit cooldown of the Reactor Coolant System (RCS). The Unit was stabilized in Mode 3. This event occurred due to an internal ground fault on the primary high voltage winding of the phase 1 potential transformer feeding the main generator voltage regulator and relay circuits, which caused CV-8 to actuate. The PT and a blown PT primary fuse were replaced. Electrical tests were performed, which verified integrity of all main generator PTs and PT fuses. The PT insulators and cubicles were cleaned,
as a preventive
measure. Additional investigation will be conducted to determine the failure mechanism of the phase 1 PT failure and appropriate action will

be taken. Engineering is continuing to investigate RCS cooldown following trips and potential corrective actions are being assessed.

END OF ABSTRACT



Table "REQUIRED NUMBER OF DIGITS/CHARACTERS FOR EACH BLOCK" omitted.



PLANT AND SYSTEM IDENTIFICATION:

Westinghouse - Pressurized Water Reactor

Energy Industry Identification System (EIIS) system and component function codes are identified in the text as {xx/xx}

IDENTIFICATION OF OCCURRENCE:

Turbine/Reactor Trip Due To Main Generator Ground Fault Protection Actuation With Reactor Power >/= 50%

Event Date: 6/10/94

Report Date: 6/29/94

This report was initiated by Incident Report No. 94-166.

CONDITIONS PRIOR TO OCCURRENCE:

Mode 1 Reactor Power 97% - Unit Load 1000 MWe

Power reduction to 90% was in progress to perform maintenance on 11 Heater Drain Pump motor {SJ/MO}.

DESCRIPTION OF OCCURRENCE:

On June 10, 1994, at 1434 hours, a turbine/reactor trip {JC} occurred due to a turbine trip signal while above the P-9 reactor power interlock setpoint of >/= 50% reactor power. The turbine trip was initiated by a main generator ground fault protection relay CV-8 actuation. Emergency Operating Procedure (EOP)-TRIP-1, "Reactor Trip Or Safety Injection" and EOP-TRIP-2, "Reactor Trip Response" were entered and Main Steam was isolated to limit cooldown of the

Reactor Coolant System (RCS). The Unit was stabilized in Mode 3 and Integrated Operating Procedure (IOP)-8 was entered.

At 1545 hours (same day) the NRC was notified of this event in accordance with 10CFR50.72(b)(2)(ii).

ANALYSIS OF OCCURRENCE:

The main generator ground protection relay CV-8 is fed by three main potential transformers (PTs) through three auxiliary PTs. The main PTs and the primaries of the auxiliary PTs are connected in Y-configurations and the secondaries of the auxiliary PTs are connected in an open delta configuration, with the CV-8 across the open delta.



ANALYSIS OF OCCURRENCE: (cont'd)

This event occurred when an internal ground fault occurred on the primary high voltage winding of the phase 1 PT {EL/XPT} feeding the main generator voltage regulator and relay circuits. This caused the PT primary fuse {EL/FU}, Westinghouse Model No. 677C452G04, to blow in order to clear the fault from the Generator 25 kilo-volt bus. In addition, it caused CV-8, which has a time delay, to pick up. CV-8 relay then timed out and picked up the "generator and main power transformer overall differential backup" multi-trip relay, which actuated to cause the main generator/turbine trip.

Equipment Performance

As stated above, an internal ground fault occurred in the phase 1 PT, (Westinghouse Part No. EED2981). Additional investigation is required to determine the cause of the PT fault.

The time response and operation of CV-8 was found to be satisfactory.

Following the event reported in LER 272/94-007-00, two design change packages were implemented to limit post-trip cooldown. During this event, the plant response to cooldown was improved; however, MS167 closure was still required to limit post-trip cooldown.

APPARENT CAUSE OF OCCURRENCE:

This event is attributed to "Design, Manufacturing,

Construction/Installation", as classified in Appendix B of NUREG-1022, due to a measured ground fault on the phase 1 PT, which is attributed to component failure. Additional testing is required to determine the exact cause of the ground fault.

PREVIOUS OCCURRENCES:

Review of documentation shows the cause of this event is an isolated occurrence.

SAFETY SIGNIFICANCE:

This event did not affect the health and safety of the public. It is reportable as an automatic Reactor Protection System (RPS) actuation in accordance with 10 CFR50.73(a)(2)(iv).

The RPS functioned as designed and the heat sink was maintained during this event. RCS cooldown requiring main steam line isolation has been experienced during other reactor trips (e.g., Unit 1 LER



SAFETY SIGNIFICANCE: (cont'd)

272/93-002-00, 272/94-005-00, 272/94-007-00, and Unit 2 LER 311/92-009-00). As described in the ANALYSES OF OCCURRENCE: section design change packages have been implemented to limit post-trip cooldown and during this event the plant response to cooldown was improved.

CORRECTIVE ACTION:

The defective phase 1 PT and the blown PT primary fuse were replaced.

Electrical tests were performed, which verified integrity of all main generator PTs and PT fuses.

The PT insulators and cubicles were cleaned as a preventive measure.

Additional investigation will be conducted to determine the failure mechanism of the phase 1 PT failure and appropriate action will be taken.

Engineering is continuing to investigate RCS cooldown following trips and potential corrective actions are being assessed.

General Manager -
Salem Operations

MJPJ:pc

SORC Mtg. 94-051

ATTACHMENT TO 9407070005 PAGE 2 OF 2

PSE&G

Public Service Electric and Gas Company P.O. Box 236
Hancocks Bridge, New Jersey 08038

Salem Generating Station

June 29, 1994

U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

SALEM GENERATING STATION
LICENSE NO. DPR-70
DOCKET NO. 50-272
UNIT NO. 1

LICENSEE EVENT REPORT 94-009-00

This Licensee Event Report is being submitted pursuant to the requirements of Code of Federal Regulation 10CFR50.73(a)(2)(iv). Issuance of this report is required within thirty (30) days of event discovery.

Sincerely yours,

J. J. Hagan
General Manager -
Salem Operations

MJPJ:pc

Distribution

The power is in your hands. 95-2189 REV 7-92

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